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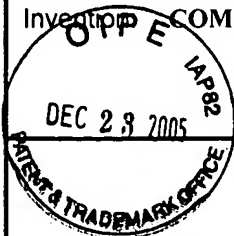
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Invention **COMPOSITION FOR ANTIREFLECTION COATING AND METHOD FOR FORMING PATTERN**I hereby certify that this Machine English Language Translation of JP 05-072700 - 23 Pages

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(71)Applicant : SEIKO EPSON CORP  
SEIKO INSTR INC

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(72)Inventor : KOBAYASHI ATSUSHI  
ABE NOBUMASA  
SUZUKI TAKASHI

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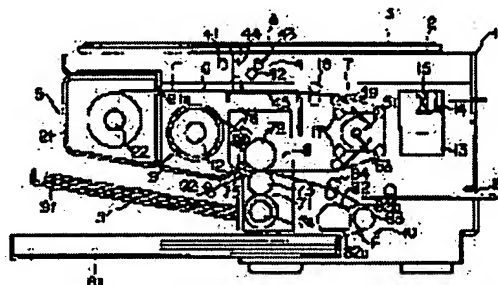
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## (54) IMAGE FORMING DEVICE AND ITS PHOTSENSITIVE MEMBER CARRYING METHOD

(57)Abstract:

PURPOSE: To provide an image forming device for preventing the occurrence of wrinkles of a photosensitive member on a carrying path and its photosensitive member carrying method.

CONSTITUTION: As to the image forming device in which a film type photosensitive member F is carried along a carrying path 6 so that the member F may successively face a supply part 5, an exposure part 4, a thermal developing part 7 and a pressure transfer part 8, and an image is exposed on the photosensitive member F by the exposure part 4, and after a latent image is formed, the thermal developing for the latent image is performed by the thermal developing part 7, and a developed image on the photosensitive member F is transferred to a transfer member P by the pressure transfer part 8, a tension giving means 26 for giving the tension to the photosensitive member F which is in carrying is installed on the carrying path 6, or the supply part 5 on the upstream side of the thermal developing part 7.



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CLAIMS

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[Claim(s)]

[Claim 1] Make a film-like sensitization member meet a conveyance way, and it conveys so that the exposure section, the heating development section, and the pressure imprint section may be made to attend one by one from a feed zone. In the image formation equipment which imprints the image of the sensitization member concerned which carried out heating development of the latent image concerned in the heating development section concerned, and was developed in the pressure imprint section concerned after exposing the image to the sensitization member concerned in the exposure section concerned and forming a latent image to an imprint member Image formation equipment characterized by forming a tension grant means to give tension to said sensitization member under conveyance in said conveyance way or said feed zone of the upstream of said heating development section.

[Claim 2] Said tension grant means is image formation equipment according to claim 1 characterized by being prepared between said exposure section and said heating development section.

[Claim 3] Said tension grant means is image formation equipment according to claim 1 characterized by being prepared between said feed zones and said exposure sections.

[Claim 4] It is image formation equipment according to claim 1 which said feed zone is constituted free [ attachment and detachment ] to the body of equipment concerned, and is characterized by forming said tension grant means in said feed zone while said exposure section, said heating development section, and said pressure imprint section are arranged in the body of equipment.

[Claim 5] Said tension grant means is image formation equipment according to claim 2, 3, or 4 characterized by having the roller of the couple arranged so that said sensitization member might be put, and the torque limiter which is connected to the roller concerned and gives damping torque to the roller concerned.

[Claim 6] Said tension grant means is image formation equipment according to claim 2, 3, or 4 characterized by having the drive motor which supplies said sensitization member, the sensor which contacts the sensitization member concerned and detects the tension of the sensitization member concerned, and the controller which controls the sensitization member amount of supply of a drive motor based on the detection value of the sensor concerned.

[Claim 7] Said tension grant means is image formation equipment according to claim 4 characterized by having the feed roller around which said sensitization member supplied was wound, and the torque limiter which is connected to the feed roller concerned and gives damping torque to the feed roller concerned.

[Claim 8] A film-like sensitization member is made to meet a conveyance way. The exposure section from a feed zone, the heating development section, After making the pressure imprint section attend one by one, exposing an image to the sensitization member concerned in the exposure section concerned and forming a latent image, In the image formation equipment which imprints the image of the sensitization member concerned which carried out heating development of the latent image concerned in the heating development section concerned, and was developed in the pressure imprint section concerned to an imprint member said heating development section It is image formation equipment characterized by

having the heating component which contacts said sensitization member from a rear face, and heats the sensitization member concerned, and for the heating component concerned contacting said sensitization member directly, and having the friction bow side which regulates dilatation and contraction of the sensitization member concerned according to the frictional force produced between the sensitization members concerned.

[Claim 9] The friction bow side of said heating component is image formation equipment according to claim 8 characterized by being the metallic roller with which the front face was ground.

[Claim 10] Image formation equipment according to claim 9 characterized by adding the electrification machine to said roller.

[Claim 11] Said heating component is image formation equipment according to claim 8 characterized by the friction bow side consisting of rollers which covered the front face of a heat-conducting characteristic member with heat-resistant rubber.

[Claim 12] Image formation equipment according to claim 8 with which the guide member which regulates dilatation and contraction of the sensitization member concerned according to the frictional force which contacts said sensitization member directly and is produced between the sensitization members concerned is characterized by having further at said exposure section.

[Claim 13] Said guide member is image formation equipment according to claim 12 characterized by being the belt-like exposure base where a front face consists of rubber material, and rotates freely with transit of said sensitization member at least.

[Claim 14] Image formation equipment according to claim 8 with which the guide member which regulates dilatation and contraction of the sensitization member concerned according to the frictional force which contacts said sensitization member directly and is produced between the sensitization members concerned is characterized by having further between said exposure section and said heating development section.

[Claim 15] Said guide member is image formation equipment according to claim 14 characterized by being the free rotation roller with which the front face consisted of rubber material at least.

[Claim 16] The sensitization member conveyance approach of the image-formation equipment characterized by to rewind the sensitization member concerned until the boundary part of the unexposed part of said sensitization member and an exposure section part is located near the downstream of said guide member in the sensitization member conveyance approach of the image-formation equipment which rewinds the unexposed part of said sensitization member to the exposure section after image formation actuation termination using the image-formation equipment of claims 12 or 14.

[Claim 17] The sensitization member which uses a polyethylene terephthalate film as a base material is made to meet a conveyance way. After making the exposure section, the heating development section, and the pressure imprint section attend one by one from a feed zone, exposing an image to the sensitization member concerned in the exposure section concerned and forming a latent image, In the image formation equipment which imprints the image of the sensitization member concerned which carried out heating development of the latent image concerned in the heating development section concerned, and was developed in the pressure imprint section concerned to an imprint member in said conveyance way It has a conveyance means to make said sensitization member meet a conveyance way, and to convey it. Said conveyance means A bearer rate sets to  $T$  at least the temperature gradient of the temperature from which said sensitization member is heated in said heating development section, and the temperature heated in said pressure imprint section from said heating development section to said pressure imprint section. Image formation equipment characterized by being constituted controllable so that  $T/t > 10\text{-degreeC / second}$  may come when the sensitization member concerned sets to  $t$  the duration conveyed from the heating development section concerned to the pressure imprint section concerned.

[Claim 18] The sensitization member which uses a polyethylene terephthalate film as a base material is used. After exposing an image to the sensitization member concerned in the exposure section and forming a latent image, in order to imprint the image of the sensitization member concerned which carried out heating development of the latent image concerned in the heating development section, and was developed in the pressure imprint section to an imprint member, In the sensitization member

conveyance approach of the image formation equipment which a sensitization member is made to meet a conveyance way and carries out sequential conveyance from a feed zone at the exposure section, the heating development section, and the pressure imprint section Said sensitization member conveyed from said heating development section at least to said pressure imprint section Said sensitization member sets to  $T$  the temperature gradient of the temperature heated in said heating development section, and the temperature heated in said pressure imprint section. The sensitization member conveyance approach of the image formation equipment characterized by being conveyed by the bearer rate of  $T/t > 10\text{-degreeC / second}$  when the sensitization member concerned sets to  $t$  the duration conveyed from the heating development section concerned to the pressure imprint section concerned.

[Claim 19] Make the sensitization member which uses a polyethylene terephthalate film as a base material meet a conveyance way, and it conveys so that the exposure section, the heating development section, and the pressure imprint section may be made to attend one by one from a feed zone. In the image formation equipment which imprints the image of the sensitization member concerned which carried out heating development of the latent image concerned in the heating development section concerned, and was developed in the pressure imprint section concerned after exposing the image to the sensitization member concerned in the exposure section concerned and forming a latent image to an imprint member It is prepared in the upstream of said heating development section, and has a tension grant means to give tension to said sensitization member which attends said heating development section. Said tension grant means Image formation equipment characterized by being constituted possible [ tension control ] so that the rate of a heat shrink of the longitudinal direction of said sensitization member which attends said heating development section may become 1% or less.

[Claim 20] Said tension grant means is image formation equipment according to claim 19 characterized by being constituted possible [ tension control ] so that abbreviation coincidence of the rate of a heat shrink of the longitudinal direction of said sensitization member and the cross direction which attend said heating development section may be carried out further.

[Claim 21] The sensitization member which uses a polyethylene terephthalate film as a base material is used. After exposing an image to the sensitization member concerned in the exposure section and forming a latent image, in order to imprint the image of the sensitization member concerned which carried out heating development of the latent image concerned in the heating development section, and was developed in the pressure imprint section to an imprint member, In the sensitization member conveyance approach of the image formation equipment which a sensitization member is made to meet a conveyance way and carries out sequential conveyance from a feed zone at the exposure section, the heating development section, and the pressure imprint section Said sensitization member which attends said heating development section at least is the sensitization member conveyance approach of the image formation equipment which is in the condition that tension from which the rate of a heat shrink of the longitudinal direction of said sensitization member becomes 1% or less was given, and is characterized by performing conveyance.

[Claim 22] Said sensitization member which attends said heating development section is the sensitization member conveyance approach of the image formation equipment according to claim 21 which is in the condition that tension the amount of heat shrinks of the longitudinal direction of said sensitization member and the cross direction carries out [ tension ] abbreviation coincidence was given further, and is characterized by performing conveyance.

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[Translation done.]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the image formation equipment which forms images, such as a copying machine, a printer, a plotter, and facsimile, using the so-called sensitization imprint type of heat developing ingredient, and its sensitization member conveyance approach.

[0002]

[Description of the Prior Art] The thing of a publication is conventionally known by JP,62-147461,A as this kind of image formation equipment. Conventionally [ this ], equipment is a color copying machine and equips the interior of the body of a copying machine with a sensitized material feed zone, the exposure section, the heating development section, the pressure imprint section, and the sensitized material abolition section along the conveyance way. The sensitized material feed zone wound the film-like sensitization member around the core, has held it (roll), and after it cuts a sensitization member to predetermined die length, it can supply it to the exposure section. The exposure section incorporates the reflected light of a manuscript, exposes an image to the sensitization side of a sensitization member, and forms a latent image in it. The heating development section is about [ 80-200 degrees ] C, and heats a sensitization member for about 30 seconds, and carries out heating development of the latent image formed in the sensitization member. The pressure imprint section separates a sensitization member and an imprint member while carrying out the pressure imprint of the image of the sensitization member which piled up and developed a sensitization member and imprint members, such as a form, at an imprint member. In the sensitized material abolition section, sequential blowdown is carried out and the sensitization member which the imprint ended is stocked in the state of a laminating.

[0003] A sensitization member applies and constitutes the microcapsule which enclosed the photosensitive matter and color material with the front face by using a plastic film as a base material. The photosensitive matter is made to start the photoreaction in the exposure section using this sensitization member (latent-image formation). The change of state is made to influence color material with heating of the heating development section, alternative compression (development) of color material is performed, the color material which crushes a microcapsule and is not solidified in the pressure imprint section is imprinted in a form, and an output image is formed.

[0004]

[Problem(s) to be Solved by the Invention] Thus, since it is made to use with conventional equipment after cutting the sensitization member, and developing time was taken for a long time, while the structure of a conveyance system and control became complicated, copy time amount was not practical for a long time. On the other hand, it is possible to use, without cutting a roll-like sensitization member, as it conveys continuously, and to shorten developing time. However, in this case, it is assumed that the following problems occur.

[0005] In order to expose a sensitization member to an elevated temperature on the occasion of development, a wrinkle arises in a continuous-form paper-like sensitization member, and thereby, there is a problem on which the quality of an output image deteriorates. namely, a sensitization member --

heating at high temperature -- thermal expansion -- or a heat shrink is carried out. In this case, although the dimensional change of the longitudinal direction of a sensitization member will be absorbed by change of the bearer rate of a sensitization member, without being absorbed, it becomes a longitudinal wrinkle and a crosswise dimensional change appears. In a heating front and the time of heating and cooling after heating, the conditions of expansion or contraction will differ and three dimension conditions will occur in a sensitization member in the short section of the circumference of the heating development section. And in a film-like sensitization member, the residual distortion by the production process of a film remains, although cooling progresses, the wrinkle of a sensitization member will not be canceled, but depending on the case, contraction will progress further, and a pressure imprint will be performed in the condition. This wrinkle causes development unevenness in the heating development section, and causes an imprint wrinkle in the pressure imprint section, and even if it is in any, it has a possibility of reducing the quality of an output image.

[0006] On the other hand, if the wrinkle generated in these heating development section is also very minute, that effect can be eliminated with developing time or an imprint pressure, but when this minute wrinkle influences the exposure section by rewinding etc., the relief of a sensitization member etc. is caused and it becomes the cause of unevenness of exposure.

[0007] To the formation of wrinkles of this sensitization member, the invention-in-this-application person conducted various kinds of experiments on the assumption that a polyethylene terephthalate film was used as a base material of a sensitization member among plastic films. In the 1st experiment, the formation of wrinkles to the tension which applied and applied tension to the sensitization member gradually was observed, and the amount of heat shrinks of the sensitization member at that time was investigated further. In addition, width of face of a sensitization member was set to 215mm in this case, whenever [ stoving temperature / of the heating development section ] (heat developing temperature) was considered as 150-degreeC regularity, and the bearer rate of a sensitization member was made into 10 mm/sec. In the 2nd experiment, heat developing temperature and pressure imprint temperature were changed suitably, adjustable [ of the bearer rate of a sensitization member to it ] was carried out, and the formation of wrinkles was observed.

[0008] Hereafter, the result of the 2nd experiment is shown as a table 2 by making the result of the 1st experiment into a table 1.

[0009]

[A table 1]



フィルム 張力	感光部材の熱縮率		熱収縮の しわによる る現像むら
	搬送方向	幅方向	
0 gf	1.2 %	0.7 %	不適
200	1.1	0.6	不適
400	0.8	0.5	適
600	0.5	0.5	好適
800	0.5	0.5	好適

[0010]  
[A table 2]

		熱現像・圧力転写間時間差による転写じわの状況				
熱現像温度	圧力転写温度	1秒	2秒	5秒	10秒	20秒
155℃	30℃	無し	無し	無し	無し	僅かに有
155℃	50℃	無し	無し	無し	無し	有り
155℃	70℃	無し	無し	無し	僅かに有	有り
155℃	90℃	無し	無し	無し	僅かに有	有り
155℃	110℃	無し	無し	僅かに有	有り	有り
135℃	50℃	無し	無し	無し	無し	有り
135℃	70℃	無し	無し	無し	僅かに有	有り
135℃	90℃	無し	無し	僅かに有	有り	有り

[0011] As mentioned above, it could cancel by applying fixed tension to a sensitization member, and the wrinkle which is generated in a sensitization member according to the table 1, and the development unevenness and imprint flaw by this have checked that tension grant which specifically controls the amount of heat shrinks to 1% or less was effective. The tension which is extent whose amount of heat shrinks of the longitudinal direction (the conveyance direction) of a sensitization member and the cross direction is [ above-mentioned ] 1% or less, and corresponds preferably is good.

[0012] Moreover, according to the table 2, while cooling seldom progressed after heat developing, the wrinkle generated in a sensitization member has checked that it was effective to fill  $T/t > 10$ -degreeC/sec, when it set the temperature gradient of heat developing temperature and pressure imprint temperature to T and conveyance time amount between heating \*\*\*\* and the pressure imprint section was specifically set to t, performing a pressure imprint and. This is considered that a sensitization member expands and it produces a wrinkling when the sensitization member which cooling after heat developing progressed too much, and became below pressure imprint temperature is reheated.

[0013] In view of the above consideration, it succeeds in this invention, and let it be the object of the image formation equipment which prevents the formation of wrinkles of the sensitization member in a conveyance way, and \*\*\*\*\* which offers the sensitization member conveyance approach.

[0014]

[Means for Solving the Problem] That the above-mentioned object should be attained, invention of claim 1 makes a film-like sensitization member meet a conveyance way, and it conveys so that the exposure section, the heating development section, and the pressure imprint section may be made to attend one by one from a feed zone. In the image formation equipment which imprints the image of a sensitization member which carried out heating development of the latent image in the heating development section, and was developed in the pressure imprint section after exposing the image to the sensitization member in the exposure section and forming a latent image to an imprint member It is characterized by forming a tension grant means to give tension to the sensitization member under conveyance in the conveyance way or feed zone of the upstream of the heating development section.

[0015] In this case, while that the tension grant means' being established between the exposure section and the heating development section or a tension grant means is established between a feed zone and the exposure section or the exposure section, the heating development section, and the pressure imprint

section are arranged in the body of equipment, the feed zone is constituted free [ attachment and detachment ] to the body of equipment, and, as for a tension grant means, being prepared in the feed zone is desirable.

[0016] The roller of the couple arranged so that a tension grant means might put a sensitization member in these cases, It has the torque limiter which is connected to a roller and gives damping torque, Or the drive motor which supplies a sensitization member and the sensor which contacts a sensitization member and detects the tension of a sensitization member, It has the controller which controls the sensitization member amount of supply of a drive motor based on the detection value of a sensor, Or it is desirable to have the feed roller around which the sensitization member supplied was wound, and the torque limiter which is connected to the revolving shaft of a feed roller and gives damping torque to a feed roller.

[0017] Invention of claim 8 makes a film-like sensitization member meet a conveyance way. From a feed zone to the exposure section In the image formation equipment which imprints the image of a sensitization member which carried out heating development of the latent image in the heating development section, and was developed in the pressure imprint section to an imprint member after making the heating development section and the pressure imprint section attend one by one, exposing an image to a sensitization member in the exposure section and forming a latent image It is characterized by equipping the heating development section with the heating component which contacts a sensitization member from a rear face and heats a sensitization member, and for a heating component contacting a sensitization member directly, and having the friction bow side which regulates dilatation and contraction of a sensitization member according to the frictional force produced between sensitization members.

[0018] In this case, as for the friction bow side of a heating component, it is desirable that it is the metallic roller with which the front face was ground, and that the electrification machine is further added to this roller. Moreover, as for a heating component, it is also desirable that the friction bow side consists of rollers which covered the front face of a heat-conducting characteristic member with heat-resistant rubber.

[0019] It is desirable to contact a sensitization member directly on the other hand at the exposure section, and to have further the guide member which regulates dilatation and contraction of a sensitization member according to the frictional force produced between sensitization members, and, as for a guide member, in this case, it is desirable that it is the belt-like exposure base which a front face consists of rubber material at least, and rotates freely with transit of said sensitization member. It is desirable similarly, to contact a sensitization member directly and to have further the guide member which regulates dilatation and contraction of a sensitization member according to the frictional force produced between sensitization members between the exposure section and the heating development section, and, as for a guide member, in this case, it is desirable that it is the free rotation roller with which the front face consisted of rubber material at least.

[0020] In the sensitization member conveyance approach of the image formation equipment rewound in the exposure section to the unexposed part of a sensitization member after image formation actuation termination using the image formation equipment of claims 12 or 14, invention of claim 16 is characterized by rewinding a sensitization member until the boundary part of the unexposed part of a sensitization member and an exposure section part is located near the downstream of a guide member.

[0021] Invention of claim 17 makes the sensitization member which uses a polyethylene terephthalate film as a base material meet a conveyance way. After making the exposure section, the heating development section, and the pressure imprint section attend one by one from a feed zone, exposing an image to a sensitization member in the exposure section and forming a latent image, In the image formation equipment which imprints the image of a sensitization member which carried out heating development of the latent image in the heating development section, and was developed in the pressure imprint section to an imprint member in a conveyance way It has a conveyance means to make a sensitization member meet a conveyance way and to convey it. A conveyance means A bearer rate sets to T at least the temperature gradient of the temperature from which a sensitization member is heated in

the heating development section, and the temperature heated in the pressure imprint section from the heating development section to the pressure imprint section. When a sensitization member sets to  $t$  the duration conveyed from the heating development section to the pressure imprint section, it is characterized by being constituted controllable so that  $T/t > 10\text{-degreeC / second}$  may come.

[0022] Invention of claim 18 uses the sensitization member which uses a polyethylene terephthalate film as a base material. After exposing an image to a sensitization member in the exposure section and forming a latent image, in order to imprint the image of a sensitization member which carried out heating development of the latent image in the heating development section, and was developed in the pressure imprint section to an imprint member, In the sensitization member conveyance approach of the image formation equipment which a sensitization member is made to meet a conveyance way and carries out sequential conveyance from a feed zone at the exposure section, the heating development section, and the pressure imprint section The sensitization member conveyed from the heating development section at least to the pressure imprint section sets to  $T$  the temperature gradient of the temperature from which a sensitization member is heated in the heating development section, and the temperature heated in the pressure imprint section. When a sensitization member sets to  $t$  the duration conveyed from the heating development section to the pressure imprint section, it is characterized by being conveyed by the bearer rate of  $T/t > 10\text{-degreeC / second}$ .

[0023] Invention of claim 19 makes the sensitization member which uses a polyethylene terephthalate film as a base material meet a conveyance way, and it is conveyed so that the exposure section, the heating development section, and the pressure imprint section may be made to attend one by one from a feed zone. In the image formation equipment which imprints the image of a sensitization member which carried out heating development of the latent image in the heating development section, and was developed in the pressure imprint section after exposing the image to the sensitization member in the exposure section and forming a latent image to an imprint member It is prepared in the upstream of the heating development section, and has a tension grant means to give tension to the sensitization member which attends the heating development section, and a tension grant means is characterized by being constituted possible [ tension control ] so that the rate of a heat shrink of the longitudinal direction of a sensitization member which attends the heating development section may become 1% or less. In this case, as for a tension grant means, it is desirable to be constituted possible [ tension control ] so that abbreviation coincidence of the rate of a heat shrink of the longitudinal direction of a sensitization member and the cross direction which attend the heating development section may be carried out further.

[0024] Invention of claim 21 uses the sensitization member which uses a polyethylene terephthalate film as a base material. After exposing an image to a sensitization member in the exposure section and forming a latent image, in order to imprint the image of a sensitization member which carried out heating development of the latent image in the heating development section, and was developed in the pressure imprint section to an imprint member, In the sensitization member conveyance approach of the image formation equipment which a sensitization member is made to meet a conveyance way and carries out sequential conveyance from a feed zone at the exposure section, the heating development section, and the pressure imprint section The sensitization member which attends the heating development section at least is in the condition that tension from which the rate of a heat shrink of the longitudinal direction of a sensitization member becomes 1% or less was given, and is characterized by performing conveyance. In this case, the sensitization member which attends the heating development section is in the condition that tension the amount of heat shrinks of the longitudinal direction of a sensitization member and the cross direction carries out [ tension ] abbreviation coincidence was given further, and it is desirable that conveyance is performed.

[0025]

[Function] In addition to the conveyance force, like claim 1, tension can be given to a sensitization member by establishing a tension grant means to give tension to the sensitization member conveyed. In the sensitization member which passes the heating development section, thermal expansion or a heat shrink arises as a result of the heating. The dilatation force or shrinkage force by this thermal expansion

or heat shrink appears as change of the configuration of a sensitization member as the elongation or the contraction of a longitudinal direction (the conveyance direction) and the cross direction, although it works in all the directions in each minute part of a sensitization member. Although expansion and contraction of a longitudinal direction will be absorbed as a delicate change of a bearer rate, crosswise expansion and contraction make a sensitization member generate a wrinkle among this. That is, in each minute part of a sensitization member, in the both-sides section of a sensitization member, expansion and contraction serve as change of a configuration, and appear. By the center section and flank of a sensitization member, this means that configuration change differs, although stress carries out a homogeneity operation at each part. Therefore, unless configuration change arises in a sensitization member after heating, the balance of residual stress collapses and a wrinkle is not canceled. On the other hand, although it will differ from the width of face of the sensitization member before heating, and the width of face of the sensitization member after heating by configuration change, since the sensitization member is conveyed continuously, the part before and behind this heating serves as a trapezoid configuration. namely, the side edge part of the sensitization member before and behind this heating -- slanting -- becoming -- as a whole -- a funnel -- a \*\* or reverse -- a funnel -- it becomes a \*\*. And this part will be joined by the tension of the longitudinal direction by the tension grant means. This tension produces the component of a force of cos of the include angle of this slant in a slanting side edge part. This component of a force acts towards reverse to the dilatation force or a shrinkage force. Therefore, it acts so that this component of a force may offset the dilatation force or shrinkage force which produces a wrinkle. And since this component of a force is influenced by the include angle of the above-mentioned slant, it becomes large in proportion to the magnitude of dilatation or contraction, and acts in the direction which always does not generate a wrinkle. Moreover, since a tension grant means is formed in the upstream of the heating development section, tension acts even on the sensitization member located not only in the heating development section but in the pressure imprint section, the wrinkle in the pressure imprint section is also controlled, and a good imprint is attained.

[0026] In this case, by establishing a tension grant means between the exposure section and the heating development section, tension grant in the location which approached the heating development section comparatively is attained to a sensitization member, and control and equalization of tension can carry out easily. Moreover, by establishing a tension grant means between a feed zone and the exposure section, tension can be made to act also on the sensitization member located in the exposure section, a relief, a skew, etc. are prevented, and the exact exposure to a sensitization member is attained.

[0027] While a sensitization member has the conveyance direction changed by having the friction bow side where the heating component of the heating development section regulates dilatation and contraction of a sensitization member according to frictional force like claim 8, dilatation and contraction are regulated with a bigger touch area. In this case, the effect of the wrinkle produced in the heating development section in the exposure section by preparing further the guide member which regulates dilatation and contraction of a sensitization member between the exposure section or the exposure section, and the heating development section can be eliminated.

[0028] By a sensitization member being rewound to near the downstream of a guide member like claim 16, while useless consumption of a sensitization member is prevented, even if the wrinkle has arisen into the boundary part of a sensitization member, the effect of the wrinkle to the sensitization member located in the exposure section by the guide member can be eliminated.

[0029] Like claim 17, with the bearer rate of the sensitization member from the heating development section to the pressure imprint section constituting so that  $T/t > 10\text{-degreeC} / \text{second}$  may come, that the above-mentioned experimental result should be satisfied, while cooling after heating development seldom progresses to a sensitization member, a pressure imprint can be performed.

[0030] It can be made to act effective in formation-of-wrinkles prevention like claim 19 that the above-mentioned experimental result should be satisfied by making the amount of heat shrinks of the longitudinal direction of a sensitization member become 1% or less with a tension grant means.

[0031]

[Example] Hereafter, according to an example, the image formation equipment of this invention and its

sensitization member conveyance approach are explained. Drawing 1 is the decision side elevation of the color copying machine concerning one example of this invention. As shown in this drawing, this copying machine serves as the manuscript base 2 glass in the top face of the body 1 of equipment, and the manuscript base covering 3 of that up space is attached possible [ standing up ]. The manuscript A as an input image is set on this manuscript base 2, and is copied in the condition of having been pressed down with the manuscript base covering 3.

[0032] For this reason, in the body 1 of equipment of the lower part of the manuscript base 2, the exposure section 4 which exposes the image of Manuscript A to the sensitization member F is arranged, and the feed zone 5 which supplies the sensitization member F is arranged in the upstream of the exposure section 4. The feed zone 5 serves as a magazine format which held the sensitization member F, and is constituted free [ attachment and detachment ] to the body 1 of equipment. The sensitization member F supplied in the body 1 of equipment from a feed zone 5 is suitably conveyed along the conveyance way 6, and the exposure section 4, the heating development section 7, the pressure imprint section 8, and the sensitized material stripping section 9 are faced it one by one. The conveyance way 6 is turned up in the part of the heating development section 7, these each part is arranged without futility in the body 1 of equipment, and the miniaturization of the body 1 of equipment is attained. The sensitization member F conveyed along the conveyance way 6 from a feed zone 5 is heated by about [ 150 degrees ] C in the heating development section 7 which a latent image is formed of exposure of an input image in the exposure section 4, and continues, and heating development of this latent image is carried out. The sensitization member F which development completed is piled up with the form P which is the continuing pressure imprint section 8 and is an imprint member, is put together, and the pressure imprint of the developed image is carried out at Form P. Finally, the sensitization member F and Form P are separated, and the sensitization member F is rolled round by the sensitized material stripping section 9, and are made and collected. Moreover, Form P is supplied to the pressure imprint section 8 from the feed section 10 of the body of equipment 1 lower part, and the form P with which the output image was imprinted is sent to a delivery unit 11.

[0033] On the other hand, the sensitization member F applies and constitutes the microcapsule which enclosed the photosensitive matter which changes from a photosensitive silver halide, reduction material, and a polymerization nature compound to the front face, and color material by using a polyethylene terephthalate (henceforth "PET") film as a base material. The photoreaction of the photosensitive matter is carried out and it carries out the trigger-work for color-material compression. Each color of Y-M-C is prepared, and much color material is applied on the surface of PET, where the microcapsule of three colors which enclosed these, respectively is mixed. In the image formation of this example, make the photosensitive matter start the photoreaction in the exposure section 4 (latent-image formation), color material is made to influence using this sensitization member F in the case of heating of that change of state of the heating development section 7, alternative compression (development) of color material is performed, the color material which crushes a microcapsule and is not solidified in the pressure imprint section 8 is imprinted in Form P, and an output image is formed.

[0034] In addition, although a PET film has the property contracted with heating, the residual strain which produces this contraction according to that production process is the main cause. And earning processing which eases and adjusts this residual strain is performed. In this example, what and is contracted 0.5% by the most general thickness of 25 micrometers and 150-degreeC among commercial items is used. [ earning processing ]

[0035] The upper left of the body 1 of equipment in drawing 1 serves as a feed zone 5, and the feed zone 5 has structure which held the sensitization member F in the black box-like magazine 21. The magazine 21 is constituted so that it can detach and attach to the body 1 of equipment with the components outside drawing. While being equipped with the unexposed sensitization member F by this attachment and detachment, the sensitization member [ finishing / exposure ] F is rewound in a magazine 21 by it, and can discard by it. The sensitization member F is formed in the long picture, is wound around a feed roller 22 in the shape of a roll, and is held in it. The sensitization member F begins to be continuously rolled from a feed roller 22, turns the sensitization side up from slit 21a of a magazine 21, and is

supplied to the exposure section 4 of the downstream.

[0036] The exposure section 4 is equipped with the R-G-B lamp 41 which is the light source, i.e., a red lamp, the Green lamp 42 and the blue lamp 43, the condenser lens 44, and the exposure base 45, and the sensitization member F runs this exposure base 45 top. A red lamp 41, the Green lamp 42, and the blue lamp 43 can irradiate light now towards the manuscript A on the manuscript base 2, the reflected light from Manuscript A is condensed by the sensitization side of the sensitization member F through a condenser lens 44 and a shutter (graphic display abbreviation), and exposure of the sensitization member F is performed. In this case, forward/backward moving of the manuscript A is carried out to a cross direction with the manuscript base 2, conveyance transit of the sensitization member F is carried out by this and this \*\*, and it constitutes the so-called scanning exposure system.

[0037] The heating development section 7 is equipped with the heating roller 51 which is a heating component, and the heating roller 51 consists of a body 52 of a roller supported to revolve by the frame (not shown) of the body 1 of equipment free [ a revolution ], and a halogen lamp heater 53 attached in the interior of the body 52 of a roller. Temperature control of the body 52 of a roller is carried out by ON-OFF of this halogen lamp heater 53 so that skin temperature may be set to 150 \*\*3-degreeC (it is 155-degreeC depending on the case), and the sensitization member F contacts that front face directly from a rear-face side. The sensitization member F makes a U-turn towards the pressure imprint section 8 here while predetermined is twisted around this body 52 of a roller the degree of angle and time amount heating of predetermined is carried out at predetermined development temperature. In addition, it replaces with the halogen lamp heater 53 in this case, and an infrared heater, cylindrical ceramic heater, and sheet-like heating element, electrode induction heating, electromagnetic wave heating, etc. can be applied.

[0038] The separation roller 75 and a pinch roller 76 are added at the imprint roller 71 with which the pressure imprint section 8 consists of an upper roller 72, the inside roller 73, and a lower roller 74, and it is constituted, and among Kaminaka both the rollers 72 and 73, the form P which are the sensitization member F and an imprint member piles up, and is introduced, and the image of the sensitization member F developed here is imprinted by Form P. In this case, imprint temperature has desirable 70 \*\*3-degreeC, and when the sensitization member F heated in the heating development section 7 has been conveyed to this part so that it may mention later, the bearer rate is controlled to be cooled to the above-mentioned temperature. An upper roller 72 and the inside roller 73 consist of hard construction material, such as a metal, the sensitization member F and Form P are strongly put among both the rollers 72 and 73 by using an upper roller 72 as a driving roller, and an imprint is performed. Since this imprint is performed by crushing the microcapsule applied to the sensitization member F, a remarkable pressure needs to join homogeneity at the sensitization member F and Form P. Then, in order to apply a uniform pressure to the inside roller 73 side, the lower roller 74 is contacted. Moreover, in the condition that an imprint is not performed, inside, bottom both the rollers 73 and 74 are lower-\*\*(ed), and an imprint condition is dispelled. The separation roller 75 is approached and formed in the downstream of the imprint roller 71, and the sensitization member F and Form P are compulsorily separated by bending the conveyance path of the sensitization member F inside acutely in this part. It is moved to the location shown in the chain line of a graphic display at the time of conveyance of the sensitization member F, and a pinch roller 76 gives the conveyance force to pinch the sensitization member F between upper rollers 72. That is, the conveyance force is given to the sensitization member F by falling on the upper roller [ whose pinch roller 7 is a free roller ] 72 side this [ whose ] is a driving roller, and being crowded. The separated sensitization member F is suitably sent to the sensitized material stripping section 9 through a pinch roller 76. In addition, the relation between imprint temperature and an imprint pressure is [ C / 20 degree/ C / about 1000kg/cm2 and / 50 degree] about 100kg/cm2 at about 200kg/cm2 and 90-degreeC in about 400kg/cm2 and 70-degreeC. It is desirable.

[0039] The sensitized material stripping section 9 is equipped with the winding roller 12, and the used sensitization member F is rolled round in the shape of a roll with the winding roller 12. The winding roller 12 will become free by the change of a clutch, if the used sensitization member F is rolled round altogether. Inversion actuation of the feed roller 22 of a feed zone 5 is carried out in this condition, and



the used sensitization members F are eventually collected in a magazine 21.

[0040] On the other hand, the feed section 10 which supplies a form to the pressure imprint section 8 is equipped with the roller 82, the guide idler 83 which changes the path of Form P, and the feed roller 84 which leads the sent-out form P to the pressure imprint section 8 for the sheet paper cassette 81 which supplies the form P as a cut sheet, and the half moon which sends out one sheet of form at a time from a sheet paper cassette 81. The sheet paper cassette 81 is constituted free [ attachment and detachment ] by the body 1 of equipment, and plurality is prepared according to various paper sizes. The roller 82 has the gummous peripheral surface which consists of straight-line partial 82a and radii partial 82b for a half moon, and Form P can be sent out until the head of Form P reaches the feed roller 84 in radii partial 82b which hooks the head of Form P and continues on the boundary line of straight-line partial 82a and radii partial 82b. Feed initiation of this form P is synchronized with conveyance of the sensitization member F, and it succeeds in it so that it can lay on top of the exposure part of the sensitization member F.

[0041] The delivery unit 11 is equipped with the delivery cassette 91 which holds the form P with which the image was imprinted, and the delivery roller 92 which leads the form P from the pressure imprint section 8 to this delivery cassette 91. The delivery roller 92 consists of above-mentioned feed rollers 84 with some fault delivery a little, and by the slip revolution, it has given tension so that neither a wrinkle nor a jam may arise in the form P at the time of a pressure imprint, while it sends out Form P.

[0042] In addition, the sign 13 in drawing is the exhaust air unit which built the gas filter 15 (neither is illustrated) into the ventilating fan 14, and exhausts outside the heat and gas which occur in the body of equipment 1 interior through a gas filter 15. Moreover, the sign 16 in drawing is feed opening for the manual bypass for feeding paper to Form P manually.

[0043] By the way, unless the exposure part of the sensitization member F reaches to the pressure imprint section 8, the process of a series of copies is not ended. When copying continuously, it is satisfactory, but when other, the unexposed part following being followed on an exposure part is also sent to the pressure imprint section 8. If the next exposure is performed in this condition, the unexposed part from the exposure section 4 to the pressure imprint section 8 will be consumed vainly. Then, he is trying to pull back an unexposed part to near the exposure section in this example in this case. That is, the sensitization member F is rewound by the inversion of the drive motor 23 (refer to drawing 4 and drawing 5 ) connected to the feed roller 22 of a feed zone 5 until the boundary parts of an exposure part and an unexposed part reach near the exposure section 4.

[0044] Thus, when sending an unexposed part, or when pulling back in order not to make the unexposed part of the sensitization member F useless, this part needs to be made not to be developed in the heating development section 7. For this reason, he is trying to sever contact of a heating roller 51 and the sensitization member F in this example. That is, the migration rollers 17 and 17 of the vertical couple which carries out a free revolution near a heating roller 51 top and the lower stream of a river are arranged, and these migration rollers 17 and 17 are horizontally moved so that the sensitization member F on the conveyance way 6 may be hooked by two places. It will be in the condition that a conveyance path detours by this migration, and the sensitization member F will be pulled apart from a heating roller 51. Therefore, when exposure does not continue, this pulling-apart condition is maintained until the migration rollers 17 and 17 drive, and it pulls apart the sensitization member F from a heating roller 51 and rewinding is completed also in the case of rewinding [ of the continuing sensitization member F ], when an exposure part passes a heating roller 51.

[0045] In addition to the above configuration, the devices in which the wrinkle generated in the sensitization member F in this example is prevented are various \*\*\*\*\*. It generates mainly with heating of the heating development section 7, and this wrinkle has what gives tension to that longitudinal direction (the conveyance direction), and the thing which gives tension crosswise in the device in which this is prevented, to the sensitization member F. As an approach of giving tension to this longitudinal direction, or it brakes conveyance of the sensitization member F, there is a method of contacting a radii-like member to the sensitization member F, and making the frictional force of that cross direction act on the sensitization member F as an approach which there is the approach of giving direct tension, and gives tension crosswise. Hereafter, order is explained for these later on.



[0046] Drawing 2 is the perspective view showing the 1st example showing the circumference of the feed roller of a feed zone. As shown in this drawing, the sensitization member F is wound around the feed roller 22, and the sensitization member F is constituted so that it may begin to be horizontally wound through a guide idler 24. The torque limiter 26 which is a tension grant means is connected to the revolving shaft 25 of a feed roller 22, and he is trying to brake conveyance of the sensitization member F by controlling the running torque of a feed roller 22. A torque limiter 26 has a friction clutch, a magnetic powder type clutch, desirable electromagnetic brake, etc. In this case, beforehand, the torque limiter 26 is adjusted so that desired tension may act on the sensitization member F. Thereby, the sensitization member F is braked, is sent out continuously and goes by the condition that desired tension is working. While this tension acts on the heating roller 51 of the heating development section 7, and acting directly that the wrinkle of the sensitization member F should be prevented so that it may mention later, also indirectly, it acts on prevention of a wrinkle by increasing the frictional force of a heating roller 51. Thus, a tension grant means can consist of this example very easily.

[0047] Drawing 3 is the perspective view showing the 2nd example showing the circumference of the feed roller of a feed zone. As shown in this drawing, near the downstream of a feed roller 22, the carrier roller 27 is formed so that the sensitization member F may be put. This carrier roller 27 consists of the friction roller 28 which gives the frictional force for braking to the sensitization member F, and the load roller 29 which gives a nip load to the friction roller 28, and carries out nip of the sensitization member F with both the rollers 28 and 29. And the same torque limiter 26 as the above is connected to revolving-shaft 28a of the friction roller 28, a spring 30 is attached in the load roller 29, and this is energized to the friction roller 28 side. Therefore, the kinetic frictional force of the friction roller 28 always acts on the sensitization member F under conveyance, and the tension by braking is given to it. In addition, a torque limiter 26 is omitted in this case, and you may make it brake by the nip force and rotational resistance of both the rollers 28 and 29 to the sensitization member F.

[0048] Drawing 4 is the perspective view showing the 3rd example showing the circumference of the feed roller of a feed zone. As shown in this drawing, the load roller 31 is formed near the downstream of a feed roller 22, and as the load roller 31 suppresses the sensitization member F caudad, it gives tension to the sensitization member F. That is, the load roller 31 is supported by one edge of the swinging arm 33 supported by the splash shaft 32 free [ a revolution ], and is caudad energized by the extension spring 34. The position sensor 35 is attached in the other end of a swinging arm 33, and this position sensor 35 detects the energization force of an extension spring 34 as a splash location of the load roller 31. On the other hand, the drive motor 23 is connected to the revolving shaft 25 of a feed roller 22, and a revolution of a drive motor 23 is controlled so that the detection value of a position sensor 35 becomes fixed through the controller outside drawing. Thus, a tension grant means is constituted by the load roller 31, an extension spring 34, a position sensor 35, and the drive motor 23, and the suitable tension for the sensitization member F can be given now. In this case, regardless of change of the path of the sensitization member F wound in the shape of a roll, the tension to the sensitization member F can be kept constant.

[0049] Drawing 5 is the perspective view showing the 4th example showing the circumference of the feed roller of a feed zone. Although the rolling roller 36 is formed near the downstream of a feed roller 22 like the 3rd example in this example, this rolling roller 36 is only put on the sensitization member F, and has structure which gives tension to the sensitization member F with the self-weight of the rolling roller 36. In order to support this rolling roller 36 indirectly, before and behind the rolling roller 36, the support rollers 37 and 37 of a couple are contacted from the underside of the sensitization member F. Moreover, the edge of the rolling roller 36 is approached at this, the position sensor 38 is formed, and fluctuation of tension with the rolling roller 36 can be detected now by this position sensor 38. On the other hand, like the 3rd example, the drive motor 23 is connected to the revolving shaft 25 of a feed roller 22, and a revolution of a drive motor 23 is controlled so that the detection value of a position sensor 38 becomes fixed through the controller outside drawing. Thus, the tension grant means is constituted by the rolling roller 36, the support roller 37, the position sensor 38, and the drive motor 23. In this case, since it has structure which gives tension with the self-weight of the rolling roller 36,

uniform tension can be made to act to the sensitization member F.

[0050] As mentioned above, the wrinkle of the sensitization member F generated in the heating development section 7 can be prevented by always giving fixed tension to the sensitization member F which constitutes a tension grant means suitably, is conveyed and goes as shown in the 1st thru/or the 4th example. Drawing 6 R> 6 is an explanatory view explaining the principle by which the wrinkle of this sensitization member is controlled. The PET film used as the base material of the sensitization member F has the property contracted by being heated, and as shown in this drawing, temperature up is contacted and carried out to the heating roller 51, and it contracts it. Although contraction of a longitudinal direction (the conveyance direction) will be absorbed as minute change of a bearer rate among this contraction, crosswise contraction serves as configuration change of the sensitization member F, it appears, and this causes [ so-called ] a wrinkle. Focusing on a contact part with the heating roller 51 of the sensitization member F, this configuration change serves as a trapezoid configuration, and appears. If tension is given to the sensitization member F here, when the angle of the both sides of this trapezoid configuration and other parts in which it succeeds is set to theta, the component of a force equivalent to  $\cos\theta$  of tension will be produced. This component of a force acts on the part of the contracted trapezoid configuration, and acts in the direction which extends the sensitization member F so that a shrinkage force may be offset. Therefore, a shrinkage force is controlled, namely, the formation of wrinkles is controlled.

[0051] The need tension in this case has desirable tension grant to which contraction of the longitudinal direction of the sensitization member F becomes 1% or less conclusively as shown in a table 1. Then, about 0.5%, as shown in the 1st thru/or the 4th example, contraction from which contraction of the longitudinal direction of the sensitization member F becomes the same [ contraction of a longitudinal direction and crosswise contraction ] preferably 1% or less is adjusting the tension of a tension grant means so that it may specifically be set to 600gf(s). this -- in the 1st and 2nd examples, the tension of about 600 gf(s) is given to the sensitization member F by load accommodation of torque limiters 26 and 26 by accommodation of the detection criteria location of position sensors 35 and 38 in the 3rd and 4th examples.

[0052] By the way, in these examples, a tension grant means is formed in a feed zone 5. Attachment and detachment of a tension grant means are attained from the body 1 of equipment by preparing in this feed zone 5, and a maintenance and tension adjustment can carry out easily. But you may make it establish these tension grant means between a feed zone 5 and the exposure section 4, and may make it establish it between the exposure section 4 and the heating development section 7 (however, the 1st example is removed). If a tension grant means is established between a feed zone 5 and the exposure section 4, tension will act on the sensitization member F located in the exposure section 4, a relief, a skew, etc. can be prevented in this part, and exact exposure will be attained. On the other hand, if a tension grant means is established between the exposure section 4 and the heating development section 7, since it is not necessary to take into consideration the self-weight of the sensitization member F to tension grant, stability and grant of uniform tension are attained. and a feed roller 18 is put side by side into this part -- prevention of a wrinkle can also be attained while being able to stabilize the exposure rate of scanning exposure, if it is made like (it arranges in the upstream of a tension grant means).

[0053] Next, the example which makes frictional force act on the sensitization member F is explained. Drawing 7 is the perspective view showing the circumference of the heating roller of the heating development section of the 5th example. As shown in this drawing, the heating roller 51 has the structure where the halogen lamp heater 53 was inserted into the tubed body 52 of a roller, are the ends of the body 52 of a roller, and is attached in the frame (not shown) of the body 1 of equipment through the bearing 54 and 54 of the couple prepared in this. The body 52 of a roller constitutes the friction bow side of a heating roller 51, and contacts the sensitization member F directly from a rear-face side by the peripheral surface. Moreover, a peripheral surface is ground and the body 52 of a roller can demonstrate sufficient frictional force to the film-like sensitization member F while heat conduction consists of good aluminum or aluminum alloys and the standup at the time of warming up is performed smoothly. Thus, if constituted, contraction of the sensitization member F produced by heating of a heating roller 51 and

subsequent cooling, especially crosswise contraction will be controlled by the static-friction force between the bodies 52 of a roller.

[0054] Drawing 8 is the perspective view showing the circumference of the heating roller of the heating development section of the 6th example. In addition to the structure of making frictional force acting to the sensitization member F of the 5th example, this example has the structure of making electrostatic force acting. As shown in this drawing, the electrification unit 55 is put side by side to the heating roller 51, and the body 52 of a roller of a heating roller 51 is charged by corona discharge. The electrification unit 55 makes electrostatic force act on the sensitization member F through the body 52 of a roller which is what stretched the discharge wire 57 in the shape of a straight line, and was charged in the case 56, and carries out electrostatic adsorption of the so-called sensitization member F. Therefore, frictional force and electrostatic force act on the sensitization member F simultaneously to the cross direction, and contraction of the sensitization member F, i.e., the formation of wrinkles, is controlled. In addition, he is trying to use for the discharge wire 57 the tungsten wire by which coating was carried out with gold, platinum, and carbon.

[0055] Drawing 9 is the perspective view showing the circumference of the heating roller of the heating development section of the 7th example. In this example, it is the structure which covered heat-resistant rubber 58 with coating etc. on the body 52 of a roller of the 5th example, and frictional force is increased by heat-resistant rubber 58. Heat-resistant rubber 58 has desirable silicone rubber etc., and he is trying to coat it thinly as much as possible in consideration of heat-conducting characteristic. In addition, although the thing with a diameter of 30mm is used for the body 52 of a roller in the 5th, 6th, and 7th examples, 25mm - its 50mm is preferably desirable 20mm - 100mm.

[0056] As mentioned above, the wrinkle of the phase murder sensitization member F is prevented for the shrinkage force produced in the sensitization member F by giving frictional force to the sensitization member F with the heating roller 51, as shown in the 5th thru/or the 7th example. But a pressure imprint is not affected in this case, namely, in the range which does not spoil the quality of an output image, if a wrinkle is prevented, the object achievement will be carried out. However, even if it is the wrinkle which does not affect such a pressure imprint, if spread in the exposure section 4 from the heating development section 7, the sensitization member F will come floating and the latent image itself will become a defect. Then, it is necessary to eliminate the effect of such a wrinkle to the exposure section 4, and an example is given and explained hereafter.

[0057] Drawing 10 is the perspective view showing the circumference of the heating roller of the heating development section of the 8th example. In this example, the guide idler 59 which is a guide member is formed near the upstream of a heating roller 51. A guide idler 59 consists of the body 60 of a roller and pivot 61 which rotate freely, are the ends of a pivot 61 and is attached in the frame (not shown) of the body 1 of equipment through the bearing 62 and 62 of a left Uichi pair prepared in this. The body 60 of a roller consists of rubber material, such as natural rubber, nitrile rubber, and silicone rubber, touches the sensitization member F by the peripheral surface, and makes frictional force (a coefficient of static friction is 0.5 or more) act to the cross direction of the sensitization member F. In this case, he is trying for the effect of a wrinkle not to attain to the exposure section 4 by cutting off propagation of the wrinkle generated with a heating roller 51 by this guide idler 59. Therefore, the relief of the sensitization member F in the exposure section 4 etc. can be prevented, and a good latent image can be acquired. In addition, frictional force can be further enlarged by grinding the front face of the body 60 of a roller in the shape of a mirror plane. Moreover, although the thing with a diameter of 15mm is used for the body 60 of a roller of the guide idler 59 in this example, 10mm - its 20mm is preferably desirable 6mm - 30mm. Furthermore, the tension given to the contact angle of the sensitization member F and the sensitization member F to a guide idler 60 has 15 degrees or more and 6 desirable gr/cm or more respectively.

[0058] Drawing 11 is the explanatory view of an about, when giving the 8th example for an example and rewinding the above-mentioned sensitization member. The sensitization member F is conveyed after the wrinkle has remained in the part at the flash pulled apart with the above-mentioned migration rollers 17 and 17. Namely, even if an imprint is completed and is pulled back by the sensitization member F in

the pressure imprint section 8, it is in the condition that the wrinkle arose into the boundary parts Fc of the exposure part Fa and the unexposed part Fb. He is trying to rewind the sensitization member F in this example till the place where this boundary part is located in the downstream of a guide idler 59, as shown in this drawing. Let this rewinding location desirably be the location of 10mm - 20mm from a guide idler 59 2mm - 30mm to the downstream. Thereby, the effect of this wrinkle does not spread in the exposure section 4, and can eliminate the effect of the wrinkle to a latent image. In addition, this approach of rewinding is applicable also in the 9th example mentioned later.

[0059] Drawing 12 is the perspective view showing the circumference of the heating development section and the exposure section of the 9th example. In this example, the exposure base 45 of the exposure section 4 is constituted by the band conveyor, and is arranged in the location higher than a heating roller 51 for how many minutes. The roller-like pulleys 47 and 47 of a couple with which this exposure base 45 was arranged before and after the plate-like base body 46 and the base body 46 (supported by the frame), It has the both roller-like pulley 47 and the endless broad belt 48 over which it was built among 47, and the broad belt 48 runs the base body 46 top according to transit of the sensitization member F because the roller-like pulleys 47 and 47 carry out a free revolution. The broad belt 48 consists of rubber material, such as natural rubber, nitrile rubber, and silicone rubber, is stuck to the rear face of the sensitization member F on the front face, and makes frictional force act to the cross direction of the sensitization member F. In this case, since the exposure base 45 is arranged in the location higher than a heating roller 51 for how many minutes, propagation of the wrinkle from the heating roller 51 is cut off in the place of the roller-like pulley 47 of the downstream, and the wrinkle of the sensitization member F on the exposure base 45 is controlled by the frictional force of exposure base 45 the very thing. In addition, in this example, the tension which gives the thickness of the broad belt 48 in general to 0.5mm or more and the sensitization member F has 10 or more desirable gr/cm. On the other hand, as the center section of the base body 46 is heaped up a little (radius of curvature of 50mm - 500mm), the contact force of the broad belt 48 and the sensitization member F is strengthened, and it may be made to enlarge frictional force.

[0060] As mentioned above, a good latent image can be acquired by eliminating the effect of the wrinkle to the exposure section 4 by guide-idler 59 grade, as shown in the 8th and 9th examples.

[0061] In addition, in the above example, although the feed roller 22 of a feed zone 5, the upper roller 72 of the pressure imprint section 8, and the winding roller 12 of the sensitized material stripping section 9 constitute a drive system to the sensitization member F, it is desirable to form a feed roller 18 in the lower stream of a river of the exposure section 4 like the above-mentioned in addition. In this case, a feed roller 22 will mainly play the role with which an upper roller 72 carries out rate control of the sensitization member [ in / for rewinding / of the sensitization member F / the exposure section 4 ] F, and, as for a feed roller 18, conveyance of the sensitization member F after a feed roller 18 and the winding roller 12 roll round the used sensitization member F.

[0062] A series of motions of a drive system, i.e., the conveyance system of the sensitization member F, are explained with the conveyance system of Form P here. A feed roller 18 drives at the same time exposure is started, and the sensitization member F is pulled out from a magazine 21, and goes. While a pinch roller 76 is \*\*\*\*(ed) by the upper roller 72 a little later than actuation of this feed roller 18, an upper roller 72 starts actuation. Moreover, actuation of an upper roller 72 is interlocked with and the winding roller 12 is also driven. The part by which the sensitization member F was exposed is conveyed by the pressure imprint section 8 through the heating development section 7 from the exposure section 4 with an upper roller 72. If the part by which this sensitization member F was exposed is conveyed to near the pressure imprint section 8, it will send so that this form P may be laid on top of the part which a roller 82 drives for a half moon, sends out Form P and the feed roller 84 drives further and by which the sensitization member F was exposed. If an imprint starts, the delivery roller 92 will drive and one side and the sensitization member F which send the separated form P into the delivery cassette 91 will be rolled round by the winding roller 12 through a pinch roller 76. In this case, if the migration rollers 17 and 17 drive and the sensitization member F and a heating roller 51 are pulled apart, when the unexposed part of the sensitization member F puts in the heating development section 7, and it puts in

the pressure imprint section, inside, bottom both the rollers 73 and 74 will descend and an imprint condition will be canceled. And completion of a series of copy activities stops each roller. this halt -- following -- a pinch roller 76 -- from an upper roller 72 -- separating (condition of drawing 1) -- moreover, the lower roller 74 -- caudad -- moving -- contact on an upper roller 72 and the inside roller 73 -- a solution -- he and also the migration roller 17 drive, and contact of the sensitization member F and a heating roller 51 is also dispelled. And in rewinding, these become free, counterrotation actuation is carried out, continuously, the clutch of a feed roller 18, a pinch roller 76, and the winding roller 12 is cut, and it goes [ a feed roller 22 rolls round the sensitization member F, and ]. In addition, although actuation and an actuation halt of these various rollers are not illustrated, it cannot be overemphasized that it is detected by an encoder and the sensor and is controlled.

[0063] By the way, in order to obtain the output image of high quality in this example, it is desirable to set imprint temperature of 150 °C and the pressure imprint section 8 to 70 °C for the development temperature of the heating development section 7 to the sensitization member F, as mentioned above. In this case, if it is made to carry out temperature up to 70 °C after cooling the sensitization member F below to 70 °C from 150 °C and, the sensitization member F will expand thermally with thermal stress, and an imprint wrinkle will occur. Therefore, if it is 70 °C when the sensitization member F heated by 150 °C in the heating development section 7 is cooled naturally and it has been conveyed by the pressure imprint section 8, the imprint formation of wrinkles is structurally advantageous from the first. So, by this example, when the difference of development temperature and imprint temperature is set to T and conveyance time amount from the heating development section 7 to the pressure imprint section 8 is set to t, the bearer rate of the sensitization member F, and the heating development section 7 and the distance of eight between the pressure imprint sections are specified so that  $T/t > 10\text{-degreeC} / \text{second}$  may come. But in order that a bearer rate may receive constraint of the holding time of an exposure rate or development temperature etc., he is trying to mainly adjust it in the distance between the heating roller 51 of the heating development section 7, and the imprint roller 71 of the pressure imprint section, although determined by the upper roller 72 of the pressure imprint section 8. Thereby, the experimental result of a table 2 can be satisfied and an imprint wrinkle can be prevented.

[0064] Drawing 13 is the decision side elevation of other examples of the color copying machine which carried out this invention. As shown in this drawing, in this example, the heating plate 19 which a feed roller 22 and the winding roller 12 are held in a magazine 21, and replaces with the heating roller 51 of the heating development section 7, and has a heating bow side is formed. This heating plate 19 builds a field-like electrical heater into an aluminum plate, and development is performed by sliding the sensitization member F on this front face.

[0065] In addition, although this example explained the color copying machine, it cannot be overemphasized that this invention is applicable to a printer, a plotter, facsimile, an electronic camera, etc.

[0066]

[Effect of the Invention] As mentioned above, according to invention of claim 1, by that of \*\*\*\*\* , a tension grant means can prevent the wrinkle generated in a sensitization member to the conveyance way or feed zone of the upstream of the heating development section, and can improve the quality of an output image to it. According to invention of claim 2, since the tension grant means is established between the exposure section and the heating development section, the stable tension to a sensitization member can be given. According to invention of claim 3, since the tension grant means is established between a feed zone and the exposure section, good exposure also becomes possible and can improve the quality of an output image further. According to invention of claim 4, since the tension grant means is formed in the feed zone, the tension adjustment to a sensitization member can carry out very easily. According to claim 5 thru/or invention of 7, positive tension grant is attained.

[0067] Since a sensitization member is contacted by the heating component of the heating development section and he is trying to regulate its dilatation of its and contraction according to invention of claim 8, the direct inhibition of the wrinkle produced in a heating component can be carried out, development

unevenness and a poor imprint can be prevented, and the quality of an output image can be improved. According to claim 9 thru/or invention of 11, frictional force of the heating component to a sensitization member can be enlarged, and the wrinkle of a sensitization member can be prevented certainly. Since the effect of a minute wrinkle which causes neither development unevenness nor a poor imprint can also be eliminated to the exposure section according to claim 12 thru/or invention of 16, unevenness of exposure can be prevented and the quality of an output image can be improved.

[0068] Since that conveyance time amount is adjusting the temperature reduction of a sensitization member from the heating development section to the pressure imprint section according to invention of claims 17 and 18, while being able to maintain at predetermined imprint temperature and being able to omit the heating apparatus of this part, without reheating a sensitization member, the formation of wrinkles by reheating can be prevented in the pressure imprint section.

[0069] According to claim 19 thru/or invention of 22, by giving tension from which the rate of a heat shrink of a sensitization member becomes 1% or less, the wrinkle of a sensitization member which influences development unevenness and a poor imprint can be prevented so that clearly from an experimental result, and the quality of an output image can be improved.

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[Translation done.]

\* NOTICES \*

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] It is the decision side elevation of one example of the color copying machine which carried out this invention.

[Drawing 2] It is the perspective view showing the 1st example showing the circumference of the feed roller of a feed zone.

[Drawing 3] It is the perspective view showing the 2nd example showing the circumference of the feed roller of a feed zone.

[Drawing 4] It is the perspective view showing the 3rd example showing the circumference of the feed roller of a feed zone.

[Drawing 5] It is the perspective view showing the 4th example showing the circumference of the feed roller of a feed zone.

[Drawing 6] Principle drawing explaining prevention of the wrinkle of a sensitization member.

[Drawing 7] It is the perspective view showing the circumference of the heating roller of the heating development section of the 5th example.

[Drawing 8] It is the perspective view showing the circumference of the heating roller of the heating development section of the 6th example.

[Drawing 9] It is the perspective view showing the circumference of the heating roller of the heating development section of the 7th example.

[Drawing 10] It is the perspective view showing the circumference of the heating roller of the heating development section of the 8th example.

[Drawing 11] It is the explanatory view which expressed the rewinding condition for that of a sensitization member based on the 8th example.

[Drawing 12] It is the perspective view showing the circumference of the heating development section and the exposure section of the 9th example.

[Drawing 13] It is the decision side elevation of other examples of the color copying machine which carried out this invention.

### [Description of Notations]

- 1 -- Body of equipment
- 4 -- Exposure section
- 5 -- Feed zone
- 6 -- Conveyance way
- 7 -- Heating development section
- 8 -- Pressure imprint section
- 21 -- Magazine
- 22 -- Feed roller
- 23 -- Drive motor
- 26 -- Torque limiter
- 27 -- Carrier roller



28 -- Friction roller  
29 -- Load roller  
31 -- Load roller  
36 -- Rolling roller  
45 -- Exposure base  
48 -- Broad belt  
51 -- Heating roller  
52 -- Body of a roller  
55 -- Electrification unit  
58 -- Heat-resistant rubber  
59 -- Guide idler  
71 -- Imprint roller  
F -- Sensitization member  
P -- Form

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[Translation done.]